ANOMALOUS ABSORPTION

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MANAGEMENT REPORT

1 January 1980 thru 31 March 1980

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acoustic absorption, fish and fish larvae, net haul data, passive sonar band

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The primary objective of the Anomalous Absorption program is to observe and correlate in a quantitative manner the anomalous, frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity

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as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support has been offered by the National Bureau of Fisheries for the program by way of ship time on the DAVID STAR JORDAN for deploying and recovering the buoy systems and in collecting and supplying net haul data at the buoy stations during the data collection period. The scope of the program includes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California current.

Marine Physical Laboratory

ANOMALOUS ABSORPTION

MANAGEMENT REPORT

1 January 1980 thru 31 March 1980

RESEARCH PROGRAM AND PLAN

The primary objective of the Anomalous Absorption program is to observe and correlate in a quantitative manner the anomalous frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support has been offered by the National Bureau of Fisheries for the program by way of ship time on the DAVID STARR JORDAN for deploying and recovering the buoy systems and in collecting and supplying net haul data at the buoy stations during the data collection period. The scope of the program includes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California current.

MAJOR ACCOMPLISHMENTS

Detailed electronics circuit design is 80% completed. Prototype circuits for hydrophone preamplifiers, signal conditioning, data acquisition, transmitter power amplifier, telemetry transmitterr and receiver and transponder electronics have been assembled and tested. Battery requirements have been determined and a prototype battery pack for the transponder package has been fabricated.

The microprocessor system and magnetic tape drive interface design has been completed and is being fabricated.

Design for packaging the receiver electronics in a glass sphere and mounting of a release mechanism and telemetry transducer to the package have been devised and fabrication has begun.

Procurement of components and materials for two prototype receivers, transmitters and transponders is 90% complete.

The source transducer array design has been greatly simplified reducing the number of transducers required to three. Tests of source transducers and receiving hydrophone configurations are encouraging. It is expected that final calibration of prototype units can be completed soon.

Considerable progress has been made on system software development. A software development/emulator system is being designed to interface directly with the receiver microprocessor. This should provide an effective means of developing and modifying system software and running system checks. Additionally, at-sea communication over the acoustic telemetry link can be accomplished via the development system.

FUTURE PLANS

Complete detail design - 3rd quarter FY 80.

Complete fabrication of prototype system - 3rd quarter FY 80.

Sea tests of prototype system in San Diego Trough 900-1200 meters water depth - June-July 1980.

Analyze data, evaluate performance, document hardware and preparation of report - 4th quarter FY 80 and 1st quarter FY 81.

Fabricate buoy set - 4th quarter FY 80.

Fabricate buoy set 2, 3 and 4 - FY 81.

Four deployments for data collection one each quarter FY 81 - Report.

Fabricate buoy sets 5 and 6 - 1st and 2nd quarter FY 82.

Six to seven deployments for data collection in FY 82 - Report.

FISCAL STATUS

(1) Amount currently provided in contract

$204,300

(2) Expenditures and commitments to date

$ 76,289

(3) Estimated funds required to complete the work

$128,011

(4) Estimated date of completion of work

30 September 1980

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